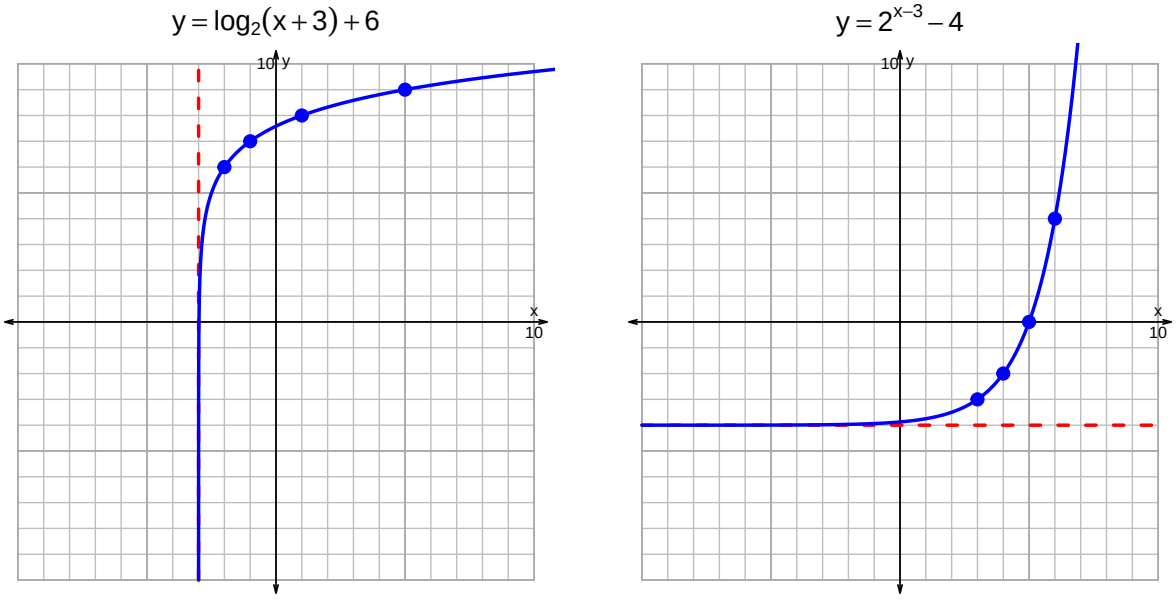
Name: Date:

S18QUIZ: EXP LOG (SOLUTION V133)

1. Graph $y = \log_2(x+3)+6$ and $y = 2^{x-3}-4$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$11 = \left(\frac{7}{4}\right) \cdot 2^{-5t/3}$$

Divide both sides by $\frac{7}{4}$.

$$\frac{11 \cdot 4}{7} = 2^{-5t/3}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{11 \cdot 4}{7}\right) = \frac{-5t}{3}$$

Divide both sides by $\frac{-5}{3}$.

$$\frac{-3}{5} \cdot \log_2\left(\frac{11 \cdot 4}{7}\right) = t$$

Switch sides.

$$t = \frac{-3}{5} \cdot \log_2\left(\frac{11 \cdot 4}{7}\right)$$

3. An exponential function $f(x) = 12.3 \cdot e^{-1.55x}$ is graphed below on a semi-log plot.

a. Using the plot above, evaluate $f(-2.7)$.

$$f(-2.7) = 800$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{1.55} \cdot \ln\left(\frac{x}{12.3}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.3)$.

$$f^{-1}(0.3) = 2.4$$